

What is claimed is:

1. A document transport apparatus for an image reading apparatus with a platen comprising:

a sheet feeding tray, and a sheet discharging tray,

5 sheet feeding means for drawing a document from the sheet feeding tray,

transport means disposed adjacent to the sheet feeding means for receiving the document from the sheet feeding means and transporting the document to a predetermined position on the  
10 platen of the image reading apparatus,

sheet discharging means disposed adjacent to the transport means for discharging the document to the sheet discharging tray after the document is read at the platen,

a switch back path disposed adjacent to the sheet  
15 discharging means for turning the document upside down, reversing a leading end and a trailing end of the document, and guiding the document to the sheet discharging means while turning the document upside down again, and

a sheet discharging path disposed adjacent to the sheet  
20 discharging means for turning the document upside down and guiding the document to the sheet discharging means without reversing the leading and trailing ends of the document.

2. A document transport apparatus according to claim 1, further  
25 comprising control means electrically connected to the transport means and the sheet discharging means, said control means controlling the transport means and the sheet discharging means such that the document after one side thereof has been read is transported to the switch back path, and the document is

transported again from the switch back path to the predetermined position on the platen through the sheet discharging path.

3. A document transport apparatus according to claim 2, wherein  
5 said sheet discharging means discharges the document to the sheet discharging tray located below the sheet feeding tray and above the platen.

4. A document transport apparatus according to claim 2, wherein  
10 said control means controls the transport means and the sheet discharging means such that the document is discharged to the sheet discharging tray via the sheet discharging path after the document is transported from the switch back path to the predetermined position on the platen through the sheet  
15 discharging path and the document is read.

5. A document transport apparatus according to claim 2, further comprising a guide member disposed at a discharge side of the platen, said guide member being positioned below the platen when  
20 the document is transported from the platen and above the platen when the document is transported to the platen, and switching means connected to the guide member for switching a position of the guide member according to a direction that the document is transported.

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6. A document transport apparatus according to claim 5, wherein said switching means includes a torque limiter disposed on a driving shaft of a transporting roller.

7. A document transport apparatus according to claim 1, wherein said sheet discharging means includes a pair of sheet discharging rollers capable of rotating in forward and reverse directions for discharging the document to the sheet discharging tray or transporting the document to the platen, and said discharge path is located between the platen and the pair of sheet discharging rollers and branched from the switch back path.

8. A document transport method comprising:

drawing a document from a sheet feeding tray,  
transporting the document to a predetermined position on a platen,

guiding the document after one side thereof is read to a switch back path, said switch back path turning the document upside down, reversing a leading end and a trailing end of the document and turning the document upside down again,

transporting the document from the switch back path toward a sheet discharging tray,

changing a transporting direction of the document before the document is completely discharged to the sheet discharging tray,

guiding the document that the transporting direction is changed to a U turn path to transport the document to the predetermined position on the platen again,

transporting the document to the U turn path after the other side of the document is read, and

discharging the document to the sheet discharging tray.

9. A document transport method comprising:

drawing a document from a sheet feeding tray,

transporting the document to a predetermined position on a platen,

guiding the document after one side thereof is read to a U turn path to thereby transport the document toward a sheet  
5 discharging tray,

changing a document transfer direction before the document is completely discharged to the sheet discharging tray,

guiding the document to a switch back path, said switch back path turning the document upside down, reversing a leading  
10 end and a trailing end of the document and turning the document upside down again,

transporting the document from the switch back path to a predetermined position on the platen,

transporting the document to the U turn path after the  
15 other side of the document is read, and

discharging the document to the sheet discharging tray.

10. An image reading apparatus comprising the document transport apparatus according to claim 1, the platen for placing the  
20 document, and reading means for reading the document placed on the platen.

11. An image reading apparatus according to claim 10, wherein said control means controls the transport means and the sheet  
25 discharging means such that the document is discharged to the sheet discharging tray via the sheet discharging path after the document is transported from the switch back path to the predetermined position on the platen through the sheet discharging path and the document is read.